Second Five-Year Review Report
for the
St. Regis Paper Company Site
Cass Lake
Cass County, Minnesota

September, 2000

Prepared by:

U.S. Environmental Protection Agency
Region 5

Approved by:

William E. Muno, Director
Superfund Division

Date:

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I. Introduction

The U.S. Environmental Protection Agency (U.S. EPA) has conducted this Five-Year Review of the Remedial Actions (RA) implemented at the St. Regis Paper Superfund Site, Cass Lake, Minnesota. This review will be supplemented, upon collection of analytical data at the Site to evaluate whether the RA at the Site remains protective of human health and the environment. This is the second Five-Year Review for the Site.

Section 121 (c) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986, and Section 300.430(f)(4)(ii) of the National Contingency Plan (NCP) requires a review of any RA which results in substance, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure. The review should occur no less often than every five years after the initiation of such RA to ensure that human health and the environment are being protected.

OSWER Directive 9355.7-02 (Structure and Components of Five-Year Reviews, May 23, 1991) and Draft OSWER Directive 9355.7-03B-P (Comprehensive Five-Year Review Guidance, October 1999) state that the EPA will conduct five-year reviews as a matter of policy at: 1) sites where no hazardous substances will remain above levels that allow unrestricted use and unrestricted exposure after completion of the RA, but the cleanup levels specified in the Record of Decision will require five or more years to attain, and 2) sites addressed pre-SARA at which the remedy, upon attainment of the cleanup levels, will not allow unlimited use and unrestricted exposure. This five-year review is being conducted in accordance with this policy.

The EPA established a three-tier approach to conducting five-year reviews, the most basic of which provides a minium protectiveness evaluation (Level I review). EPA determines the level of the review based on site-specific considerations, including the nature of the response action, the status of ongoing site response activities, and proximity to populated areas and sensitive environmental areas. A Level I review is currently being conducted by U.S. EPA at this time, as fieldwork remains to be completed in order to complete a Level II review. This Five-Year Review outlines actions that will be performed in order to obtain the necessary data to perform a Level II review.

II. Site Chronology

The Site was placed on the National Priorities List on September 21, 1984, with a Hazard Ranking Score of 53. The Minnesota Pollution Control Agency (MPCA) was the lead agency for the Site until 1995. On September 21, 1984, pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, EPA placed the Site on the NPL. In February 1985, the MPCA and the PRP, Champion International Corporation, reached an agreement on remedial measures to address the threat to public health and the environment posed by the Site. The MPCA and the PRP signed two

Response Orders by Consent under the Minnesota Environmental Response and Liability Act of 1983 (MERLA) to implement their agreement, one for the Wood Treatment Facility Area and one for the City Dump Pit Area at the former Cass Lake City Dump. These Orders provided for the following: 1) a remedial investigation of the Site; 2) a feasibility study; 3) development and implementation of a Response Action Plan to abate or minimize the release of hazardous substances from the Site; and 4) routine monitoring to determine the effectiveness of the response actions.

III. Site Background

The Site is located in Section 15, Township 145N, Range 31W, in Cass County, in the municipality of Cass Lake, Minnesota. The Site is wholly located within the exterior boundaries of the Leech Lake Reservation. Appendix A contains a map of the Site. The St. Regis Corporation operated a wood treatment facility at the Site from 1957 to 1985. St. Regis Corporation leased portions of the Site from the Great Northern Railroad, which through merger, became part of Burlington Northern Railroad. The St. Regis Corporation eventually expanded the Site by purchasing land south of the leased facility. On January 31, 1985, Champion International Corporation and the St. Regis Corporation merged. The common names for the Site are “St. Regis/Wheeler” or “Champion”.

The hyrdogeology at the St. Regis site consists of an upper and lower aquifer. The upper aquifer is an unconfined aquifer recharged directly by precipitation infiltration. The surface of the saturated zone is located at about 10 to 15 feet below ground surface (bgs) at the site. The dominant direction of ground water flow in the upper aquifer at the Treating Facility is west to east toward Pike Bay, Cass Lake, and the channel that connects the two lakes. Ground water flow in the upper aquifer at the Former City Dump is south to Fox Creek and east to the wetland area contiguous to Fox Creek and Pike Bay. The lateral ground water gradient and flow direction in the lower aquifer below these operable units are similar to those of the surficial aquifer.

Creosote use began in 1957, and pentachlorophenol (PCP) in 1960; both chemicals were used until the facility closed. PCP was generally combined with a carrier solvent, usually No. 2 fuel oil, and when present as a free phase product in the ground water tends to float. In the latter years of facility operations, a water dispersible PCP concentrate, which was a proprietary mixture of PCP and ketone, was used. The PCP concentrate was denser than water, and would sink if present as a free phase product in the ground water. From approximately 1969 and 1973, in the non-freezing months, a water soluble Copper-Chromium-Arsenate (CCA) salt solution was also used for wood treating.

The following details a history of operations at the site:

OU1 - Treating Facility

The generation of wastewater began at the facility in 1957 when a 72-inch diameter by 75-foot long pressure cylinder was installed in the wood treating plant in the north central portion of the Site. Creosote was used as the wood treating chemical during the early years of facility operation. Wastewater discharged from the cylinder passed through a baffled separator tank and a charcoal filter before being discharged to a disposal pond located adjacent to the treating plant, Pond A.

In 1960, a 49-foot long extension was added to the original cylinder. The use of PCP as a treating chemical began at about this time. Two underground tanks were added to further separate the water from the oil in the discharge. Beginning in about 1960, wastewater was discharged to a series of three ponds, collectively known as Pond B.

In 1969, a second cylinder was added to treat wood with CCA. The small amount of water that was routinely generated when the water soluble preservatives were used was returned as makeup water for preparing the treating solution; however, some cylinder wash water was discharged to the disposal ponds.

In mid-1971, the series of three disposal ponds were covered with sand and replaced with a new pond, Pond C. In 1972, the cylinder that had been used for treating wood with CCA was added as an expansion tank to the original cylinder a new 72-inch diameter by 150-foot long cylinder was added for treating wood with PCP and CCA. In addition, a 20,000 gallon underground wastewater separation tank was added for each cylinder.

Improvements were made to the wastewater treatment system in 1974. With these improvements, wastewater from each cylinder was carried to a primary separating tank which was approximately 8 feet in diameter and 40 feet long. The oil that accumulated on top of the wastewater was skimmed and returned to the process. Water from the primary tank was pumped to a mixing station where a flocculating agent was added. The mixture was then pumped to a second tank for settling. Water was pumped from this tank through a sand filter and carried through the pipe to a sawdust filter located adjacent to Pond C.

During the period of 1974 through mid-1980, the average flow of wastewater to Pond C was estimated to be 12,000 gallons per day with a maximum flow rate of approximately 17,000 gallons per day. Water in Pond C was aerated and nutrients were added to improve the treatment of the wastewater. This system operated from 1974 until the pressure treating system was again revised in mid-1980. From mid-1980 to 1985, water was evaporated from the waste and the residue placed in barrels and transported to a hazardous waste disposal facility out-of-state. From mid-1981, the PCP used was a type that allowed the wastewater to be reused in the process. Mention was made in MPCA correspondence from 1976 of two tipi burners at the Site. These burners were used by St. Regis to make charcoal from wood scrap. One of the burners was situated just to the south of Pond C, and spray irrigation of wastewater from Pond C was used for fire prevention on the grassland where the burner was located. The location of the second tipi

burner is not known.

A 3,000 gallon spill of creosote in 1976 was recovered by absorption with sawdust, which was later burned in a brush-burning project. During two occasions in 1976, sludge from the cleaning of tanks was hauled to a disposal site in the southwestern corner of the property. Pond C was dredged on one occasion, and the dredged bottom material was placed on the south, east and north sides of the pond. Sawdust from the sawdust filters was periodically deposited in the landfill area northeast of Pond C. In 1980, wastewater from Pond C was sprayed on the ground in the southwest portion of the property. Timber, metal and other demolition wastes were deposited in the landfill area. Empty containers that once contained water soluble, wood preserving chemicals were also reported to have been placed in the landfill area.

OU2 - Cass Lake City Dump Pit

Between 1957 and 1960, wastewater from Pond A and sludge (the substance left at the bottom of storage tanks when they were cleaned) were hauled to a pit in the dump and burned. This disposal from Pond A occurred almost daily at an estimated rate of 500 gallons per day, for a total of 547,500 gallons for those three years. From 1960 to 1975, unknown quantities of sludge were hauled to the pit. It is probable that the contents of the pit were burned during this time period as well. The pit containing the ash and unburned residuals was eventually covered. All three types of chemicals: creosote, PCP and CCA, were used at the facility during the time that waste was hauled to the pit.

IV. Remedial Actions

In 1986, MPCA issued two Minnesota Enforcement Decision Documents (MEDDs) for the Site. The first MEDD, dated March 5, 1986, selected the response actions for OU1, OU3, and OU4 as follows:

- A system of ten (10) groundwater pump-out wells with granular activated carbon treatment which pumps and treats contaminated groundwater until acceptable levels in groundwater are reached (OU1);
- The construction of a Resource Conservation and Recovery Act (RCRA) on-site containment vault for the deposition of hazardous waste sludges and contaminated soil-excavated during source removal (OU4);
- The extension of the Cass Lake Community Water System to residents not serviced and potentially affected by groundwater contamination from the Site (OU3);
- Long-term monitoring of the groundwater and surface water to determine the effectiveness of the groundwater pump-out system;
- Long-term monitoring of the on-site containment vault;
- Long-term monitoring of the treated groundwater discharge and selected fish species to determine the effectiveness of the groundwater treatment system;

- Long-term operation and maintenance (O&M) of the ground water pump-out system; and
- Long-term operation and maintenance of the on-site containment vault.

The second MEDD, dated July 29, 1986, selected the response actions for the Cass Lake City Dump (OU2) as follows:

- Long-term operation and maintenance of a contaminated groundwater gradient control, pump-out and treatment system which will prevent migration of contaminated groundwater; and
- Long-term monitoring to assess response action performance.

The response goals and objectives, as stated in the MEDD for the OU1, Wood Treatment Facility Area were to:

- Adequately protect the public against exposure to PCP, polynuclear aromatic hydrocarbons (PAHs), hexa hepta and octachlorodibenzo-p-dioxin (PCDD) and polychlorinated dibenzo-p-furans (PCDF) isomers through direct contact or ingestion of groundwater from private and public water supplies;
- Adequately protect the public against exposure to PCP, PAH, PCDD and PCDF isomers potentially released to surface water from the groundwater; and
- Adequately protect and minimize damage to the environment from the migration of PAH, PCDD and PCDF isomers in the groundwater.

Construction of the remedial components of the selected remedy for all OUs, defined in the two MPCA MEDDs, occurred in 1985 through 1987. Groundwater monitoring and vault operation maintenance have been carried out since June 1987.

In September 1988, Champion International Corporation, (CIC) quitclaimed a large portion of the Site to the City of Cass Lake and to the Tribe. Champion retained ownership and control over only the groundwater treatment plant, spent carbon cell, groundwater pump out wells, and the area known as the Containment Vault.

On January 24, 1995, EPA issued a Unilateral Administrative Order (106 Order) to Champion, pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606. The Order, among other things, required Champion to continue to perform certain remedial activities originally undertaken pursuant to the two MEDDs issued by the MPCA. Currently, Champion is finishing remedial work under this 106 Order, and the Site is in the O&M stage of the remedial process.

In the 1995 106 Order, EPA re-defined the operable units at the Site as follows: 1) ” or “Operable Unit 1” or “Wood Treatment Facility Area” shall mean the portion of the Site known as the

Wood Treatment Facility Area; 2) "Operable Unit 2" or "Containment Vault Area" shall mean the portion of the Site known as the Contaminated Soil Containment Vault Area; and 3) "Operable Unit 3" or "City Dump Area" shall mean the portion of the Site bordered to the north by the Wood Treatment Facility Area, to the east by Pike Bay, to the south by Fox Creek, and to the west by the Containment Vault Area.

In 1995, the MPCA issued a Level 1 Five Year Site Review. The review was based upon a review of all documents associated with the Remedial Assessment, a site visit, and a limited ecological risk evaluation. This review highlighted the following concerns remaining at the Site:

- Assess the effectiveness of the extraction system capture zones;
- Evaluate the remnant plume of contaminated ground water and assess the potential for impact to the Cass Lake/Pike Bay ecosystem;
- Evaluate the need for additional groundwater monitoring locations to define the southern extent of the remnant plume;
- Define the extent and depth of light nonaqueous phase liquid (LNAPL) across the site to determine the adequacy of the current recovery effort;
- Assess the potential for dense nonaqueous phase liquid (DNAPL) contamination and its long-term impact on the remedial objectives established in the MEDDs;
- Perform confirmatory sampling to evaluate the effectiveness of the removal for PAHs, PCP, dioxin, and metals. (The RA removed the visibly contaminated soils and sludges, but did not include confirmatory sampling);
- Evaluate the effectiveness of the remedy in light of new federal and state water quality standards;
- Conduct sampling and analysis of soil, sediment and surface water. If significant soil, sediment, and/or surface water contamination is found, perform an ecological risk assessment to assess existing and potential impacts of contaminants to aquatic and terrestrial receptors and to the Pike Bay/Cass Lake system;
- Continue monitoring fish hatchery wells and Leech Lake Division of Resources Management (DRM) water supply well; and
- Conduct a survey to identify residential wells in use in the vicinity of the Site.

On April 6, 1995, EPA approved the MPCA Level 1 Five Year Review of the site, and oversight authority changed from state-lead to federal-lead, at the request of the Tribe. The Tribe has a Support Agency Cooperative Agreement with EPA which assists them in participation in site-related activities and provides an on-going presence at the site for EPA.

V. Five-Year Review Process

Based on the 5-year review, EPA, MPCA, and the Leech Lake Reservation Division of Resource Management (DRM) identified several areas that require further investigation. At the request of the Leech Lake Reservation, a Biological Technical Assistance Group (BTAG) was convened for the site to provide recommendations concerning the scope of the sampling in support of the screening ecological risk assessment. EPA is in the process of finalizing the Field Sampling Plan and Quality Assurance Project Plan and anticipates sampling to be completed this year. An amendment to this Five-Year Review will be completed upon receipt of analytical data.

The objective of the field sampling program is to collect additional data at the site in order to evaluate whether additional action is required at the site. Specifically, the following areas have been identified for further evaluation:

- **Residual soil areas:** The residual soil areas include the Former City Dump Pit; former Ponds A, B, and C; the Former Spray Irrigation Area and Landfill; nearby residential yards; and the Former North Storage Area. Potential sources of contamination in these areas include fill material stored in former on-site areas, air deposition of contaminants from site operations, and residual contamination from treated material storage.

- **Fox Creek:** The portions of Fox Creek to be evaluated include (1) the segment immediately south of the Southwest Area, (2) the segment immediately south of the Former City Dump, and (3) the Fox Creek delta to Pike Bay. Potential sources of contaminants in these portions of Fox Creek include (1) surface water runoff from the Southwest Area, (2) groundwater discharge from the Former City Dump Pit and the rest of the City Dump, and (3) surface water transport and deposition from upstream areas into the Fox Creek delta.

- **Remnant plume discharge and water-transported depositional areas:** The potential remnant plume discharge areas to be evaluated include the channel that connects Pike Bay and Cass Lake, the western shoreline of Pike Bay south of the remnant plume area, and the deep holes in Pike Bay and Cass Lake. The potential source of contamination in these areas includes contaminated groundwater from the Treating Facility.

- **Potential dumping areas:** Potential sources of contamination in this area include dumping of sludge or other materials from the Treating Facility.

- **Off-site water supply wells:** Off-site water supply wells were sampled early in the RI and the community water system was extended to include 15 residences potentially impacted by the site. Additional off-site water supply wells will be sampled for health and safety purposes, including the water supply well at the fish

hatchery located southwest of OU2.

Based on discussions with EPA, MPCA and the Leech Lake Reservation, Champion International conducted a ground water modeling effort for the site. The model was developed to estimate the extent of the capture zones induced by the pump out wells at the former Treating Facility and City Dump Site. It is still recommended that an additional monitoring well nest be placed to validate the results of the modeling effort, as well as to define the southern extent of the contaminant plume.

VI. Five-Year Review Findings

A comprehensive review of all monitoring and sampling data will be conducted following the work to be completed this sampling season. Matrices to be sampled during this investigation include soil, ground water, surface water, sediment, and fish tissue. All analytical results will be compared to human health and ecological screening levels for each medium. U.S. EPA will evaluate this data, as well as any other information that may be presented to the Agency, concerning the protectiveness of the remedy.

VII. Assessment

Federal and State drinking water quality standards have changed since issuance of the MEDDs. Both the MCL and HRL are more stringent for PCP than the 1986 RAL. It is recommended that the ground water standards for the Site compounds be revised. The change would be effectuated by the appropriate mechanisms, consistent with CERCLA and the NCP. MPCA Aquatic Life Standards for Class 2B waters have also been updated and include six chemicals of Site concern. These standards did not exist in 1986. Upon collection of the additional data for the Site, these will be evaluated as part of the next review for the Site.

Long-term monitoring continues at the site. Influent and treated effluent from the carbon treatment plant have been sampled on a regular schedule as required by the NPDES permit. Analytical data received in May of 2000 reported a possible PCP exceedance in the effluent sample. Champion took immediate action to re-sample, request quick turn around for analytical work, discuss the potential of exceedance with the proper authorities, temporarily shut the system down, and reconfigure the treatment system. The system was re-started and effluent samples were collected and analyzed each week following shut down, to confirm that the system continues to operate properly. A surface water sample was collected near the outfall for the water treatment system during the time period that the system was not operating properly. While PCP was detected in the surface water sample, it was at a concentration which was below the Minnesota surface water standard for Class 2B waters. The concentrations of PAH compounds in the effluent sample collected from the carbon treatment plant are below the Minnesota surface water quality standards for Class 2B waters. Monitoring of the carbon treatment plant in

accordance with the NPDES permit shows that the system continues to operate properly.

U.S. EPA will be reviewing the NPDES permit to evaluate whether modifications to the permit are required.

VIII. Deficiencies

Completion of the proposed investigatory work and the installation of an additional monitoring well nest is needed to address data gaps at the Site.

IX. Recommendations and Follow-up Actions

U.S. EPA will complete the field investigation as summarized above during 2000. Analytical results will be compared to human health and ecological screening levels and an assessment will be performed in coordination with MPCA and the Leech Lake Reservation in 2001.

It is recommended that an additional monitoring well nest be placed to validate the results of the ground water modeling effort, as well as to define the southern extent of the contaminant plume.

X. Protectiveness Statement

Hazardous substances, pollutants, or contaminants will remain at the St. Regis Paper Company Superfund Site which require access controls as well as operation and maintenance and therefore will not allow unlimited or unrestricted use. To ensure protection of human health and the environment, the Region will perform the data collection activities, as described above. The results of these analyses will be discussed in the amendment to this Five Year Review.

Soil: While the RA removed visibly contaminated soils and sludges in the RCRA soil vault, no confirmatory sampling was performed on surficial soils left behind. These soils will be sampled as part of the U.S. EPA field investigation. An evaluation will be performed to determine if the RA for the soils remains protective of human health and the environment, or whether additional actions are required.

Ground water: It is recommended that the new drinking water quality standards be implemented. The ground water extraction/containment systems present at the Site will remain protective of human health and the environment with implementation of the new water quality standards.

Long-Term Water Supply: The connection to the Cass Lake municipal water system has provided the residents near the Site with a safe, long-term drinking water source, which has eliminated their exposure to contaminated ground water from the Site via private wells. The resident who

refused to hook into the municipal water system receives bottled water from Champion.

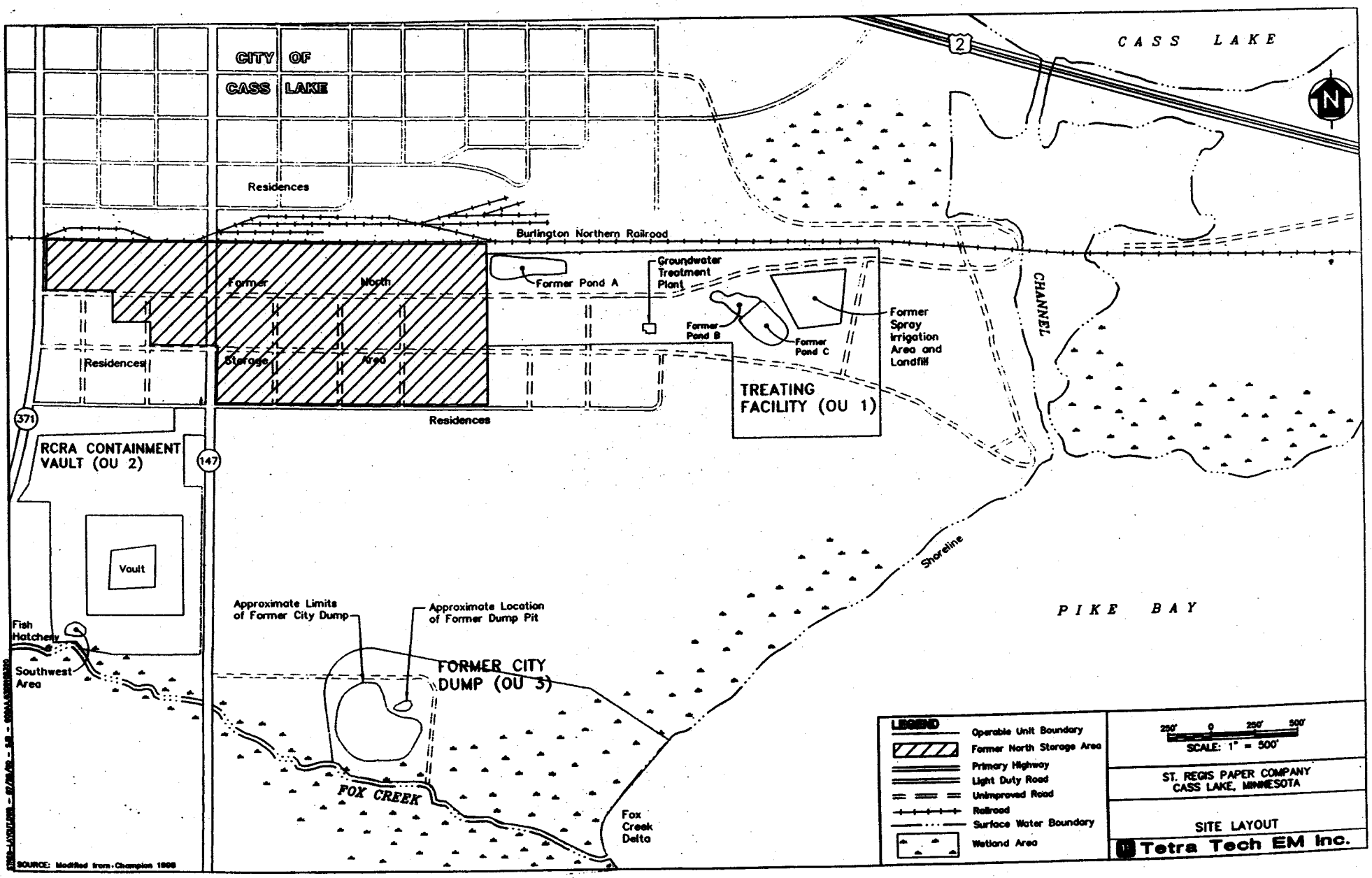
XI. Next Review

Upon evaluation of the new data, U.S. EPA will complete an amendment to this Five-Year Review by September, 2001.

XII. Other Comments

The Leech Lake Band of Chippewa (Ojibwe) is participating in a U.S. EPA Headquarters pilot initiative entitled “Plan for Enhanced State and Tribal Role in Superfund”. This pilot will assist the Leech Lake Band of Ojibwe to gather information about cultural resource use and to develop risk assessment criteria that could be used as a model for evaluating cleanup effectiveness at Superfund sites on or adjacent to tribal lands.

Appendix A


CITY OF CASS LAKE
CASS LAKE
2
N
Residences
Burlington Northern Railroad
Former North Storage Area
Former Pond A
Groundwater Treatment Plant
Former Pond B
Former Pond C
Former Spray Irrigation Area and Landfill
CHANNEL
TREATING FACILITY (OU 1)
Residences
Residences
371
147
RCRA CONTAINMENT VAULT (OU 2)
Vault
Fish Hatchery
Southwest Area
Approximate Limits of Former City Dump
Approximate Location of Former Dump Pit
FORMER CITY DUMP (OU 3)
FOX CREEK
Fox Creek Delta
Shoreline
PIKE BAY
SOURCE: Modified from Champion 1988
LEGEND
Operable Unit Boundary
Former North Storage Area
Primary Highway
Light Duty Road
Unimproved Road
Railroad
Surface Water Boundary
Wetland Area
250' 0 250' 500'
SCALE: 1" = 500'
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SITE LAYOUT
Tetra Tech EM Inc.